

WHAT IS CLAIMED IS:

1. A spinal construct for engagement with adjacent vertebral bodies, comprising:
a spinal implant extending along a longitudinal axis and having a first transverse dimension sized for insertion within an intervertebral space between the adjacent vertebral
5 bodies and a second transverse dimension greater than said first transverse dimension and corresponding to a select height of said intervertebral space; and
an elongate member sized to span the intervertebral space and engaged between the adjacent vertebral bodies to establish said select height of the intervertebral space and to maintain said select height as said spinal implant is transitioned from said first transverse
10 dimension to said second transverse dimension along said select height to thereby provide controlled compression of said spinal implant.
2. The spinal construct of claim 1, wherein said spinal implant includes:
a first pair of side surfaces spaced apart and arranged generally opposite one another to
15 define said first transverse dimension; and
a second pair of side surfaces spaced apart and arranged generally opposite one another to define said second transverse dimension.
3. The spinal construct of claim 2, wherein said second pair of side surfaces are
20 arranged substantially parallel to one another.
4. The spinal construct of claim 2, wherein said second pair of side surfaces are angled relative to one another to define a taper extending along said longitudinal axis

corresponding to the natural lordotic angle between the adjacent vertebral bodies.

5 5. The spinal construct of claim 2, wherein said first pair of side surfaces are angled relative to one another to define a taper extending along said longitudinal axis to facilitate insertion of said spinal implant within the intervertebral space between the adjacent vertebral bodies.

10 6. The spinal construct of claim 2, wherein said spinal implant has a substantially rectangular transverse cross section and includes a transitional surface at diagonally opposite corner portions of said spinal implant extending between said first pair of side surfaces and said second pair of side surfaces to facilitate rotation of said spinal implant within the intervertebral space about said longitudinal axis.

15 7. The spinal construct of claim 6, wherein said transitional surface comprises a rounded surface.

8. The spinal construct of claim 1, wherein said first transverse dimension is oriented substantially perpendicular to said second transverse dimension.

20 9. The spinal construct of claim 1, wherein said spinal implant is engaged with said elongate member to allow selective rotation of said spinal implant relative to said elongate member about said longitudinal axis, said selective rotation of said spinal implant serving to transition said first transverse dimension to said second transverse dimension along said select

height of the intervertebral space.

10. The spinal construct of claim 1, further comprising an interlock between said spinal implant and said elongate member to selectively prevent at least one of rotational and lateral movement of said spinal implant relative to said elongate member subsequent to alignment of said second transverse dimension along said select height of the intervertebral space.

11. The spinal construct of claim 10, wherein said interlock prevents both rotational and lateral movement of said spinal implant relative to said elongate member.

12. The spinal construct of claim 10, wherein said interlock comprises:
at least one projection portion extending from one of said spinal implant and said elongate member; and
at least one aperture defined by another of said spinal implant and said elongate member; and

wherein insertion of said at least one projection portion into a respective one of said at least one aperture prevents said at least one of rotational and lateral movement of said spinal implant relative to said elongate member.

13. The spinal construct of claim 12, further comprising a fastener; and
wherein insertion of said at least one projection portion into said respective one of said at least one aperture is accomplished by engagement of said fastener between said elongate

member and said spinal implant.

14. The spinal construct of claim 13, wherein said elongate member includes a passage extending therethrough and said spinal implant includes a threaded opening; and

5 wherein said engagement comprises inserting said fastener through said passage in said elongate member and threading said fastener into said threaded opening in said spinal implant.

15. The spinal construct of claim 12, wherein said spinal implant is rotatably engaged with said elongate member to allow rotation of said spinal implant relative to said
10 elongate member about said longitudinal axis, said at least one projection portion and said at least one aperture each being offset from said longitudinal axis.

16. The spinal construct of claim 12, wherein said interlock comprises:

at least two projection portions extending from said one of said spinal implant and said
15 elongate member; and

at least two apertures defined by said another of said spinal implant and said elongate member; and

wherein insertion of said at least two projection portions into respective ones of said at least two apertures prevents said at least one of rotational and lateral movement of said spinal
20 implant relative to said elongate member.

17. The spinal construct of claim 1, wherein said spinal implant comprises a fusion cage; and

further comprising a bone growth promoting material positioned within said fusion cage to facilitate fusion with the adjacent vertebral bodies.

18. The spinal construct of claim 17, wherein said bone growth promoting material
5 comprises a bone morphogenic protein.

19. The spinal construct of claim 1, wherein an axially facing portion of said spinal
implant defines at least two tool engaging elements sized and configured for engagement with
corresponding portions of a manipulation tool to facilitate rotation of said spinal implant
10 within said intervertebral space about said longitudinal axis.

20. The spinal construct of claim 19, wherein said tool engaging elements are
apertures and wherein said corresponding portions of said manipulation instrument comprise a
pair of prongs sized and configured for insertion into said apertures.
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21. The spinal construct of claim 19, wherein said tool engaging elements are
positioned diametrically opposite one another relative to said longitudinal axis.

22. The spinal construct of claim 21, wherein said elongate member defines a pair
20 of arcuate slots positioned diametrically opposite one another relative to said longitudinal axis,
said arcuate slots being sized and configured to receive either of said tool engaging elements or
said corresponding portions of said manipulation tool during rotation of said spinal implant

about said longitudinal axis.

23. The spinal construct of claim 1, wherein said spinal implant has a substantially rectangular transverse cross section.

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24. The spinal construct of claim 1, wherein said elongate member comprises a plate having first and second end portions, said plate defining at least one opening adjacent each of said first and second end portions for receiving a bone screw therethrough for engaging said plate to the adjacent vertebral bodies.

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25. A spinal implant assembly, comprising:

a device adapted for insertion into an intervertebral space between an adjacent pair of vertebral bodies, said device extending along a longitudinal axis and defining a primary transverse dimension and a secondary transverse dimension, said secondary transverse dimension sized for insertion into the intervertebral space, said primary transverse dimension sized greater than said secondary transverse dimension and corresponding to a select height of said intervertebral space; and

an elongate member sized to span the intervertebral space and engaged between the adjacent vertebral bodies to establish said select height of the intervertebral space and to maintain said select height as said device is rotated about said longitudinal axis to align said primary transverse dimension along said select height to thereby provide controlled compression of said device.

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26. The spinal implant assembly of claim 25, wherein said device includes:
a pair of primary side surfaces spaced apart and arranged generally opposite one another to define said primary transverse dimension; and
a pair of secondary side surfaces spaced apart and arranged generally opposite one another to define said secondary transverse dimension.

27. The spinal implant assembly of claim 25, wherein said device has a substantially rectangular transverse cross section and includes a rounded transitional surface at diagonally opposite corner portions of said device extending between said pair of primary side surfaces and said pair of secondary side surfaces to facilitate rotation of said device within the intervertebral space about said longitudinal axis.

28. The spinal implant assembly of claim 25, wherein said primary transverse dimension is oriented substantially perpendicular to said secondary transverse dimension.

29. The spinal implant assembly of claim 25, wherein said device is engaged with said elongate member to allow selective rotation of said device relative to said elongate member about said longitudinal axis, said selective rotation of said device serving to align said primary transverse dimension along said select height of the intervertebral space.

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30. The spinal implant assembly of claim 25, further comprising an interlock between said device and said elongate member to selectively prevent at least one of rotational and lateral movement of said device relative to said elongate member subsequent to alignment

of said primary transverse dimension along said select height of the intervertebral space.

31. The spinal implant assembly of claim 30, wherein said interlock comprises:
at least one projection portion extending from one of said device and said elongate
5 member; and
at least one aperture defined by another of said device and said elongate member; and
wherein insertion of said at least one projection portion into a respective one of said at
least one aperture prevents said at least one of rotational and lateral movement of said device
relative to said elongate member.

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32. The spinal implant assembly of claim 25, wherein said device comprises a
fusion cage; and

further comprising a bone growth promoting material positioned within said fusion
cage to facilitate fusion with the adjacent vertebral bodies.

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33. The spinal implant assembly of claim 25, wherein said spinal implant has a
parallelepiped configuration.

34. The spinal implant assembly of claim 25, wherein said elongate member
20 comprises a plate having first and second end portions, said plate defining at least one opening
adjacent each of said first and second end portions for receiving a bone screw therethrough for
engaging said plate to the adjacent vertebral bodies.

35. A spinal construct for engagement with adjacent vertebral bodies, comprising:
a spinal implant extending along a longitudinal axis and having a first transverse
dimension sized for insertion within an intervertebral space between the adjacent vertebral
bodies and a second transverse dimension greater than said first transverse dimension and
5 corresponding to a select height of said intervertebral space; and
means for establishing said select height of said intervertebral space and for
maintaining said select height as said spinal implant is transitioned from said first transverse
dimension to said second transverse dimension along said select height to provide controlled
compression of said spinal implant.

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36. The spinal construct of claim 35, further comprising means for transitioning
said spinal implant from said first transverse dimension to said second transverse dimension
along said select height.

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37. The spinal construct of claim 35, wherein said mean for establishing and
maintaining comprises an elongate member engaged to the adjacent vertebral bodies and
spanning the intervertebral space; and

further comprising means for engaging said spinal implant to said elongate member.

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38. The spinal construct of claim 37, further comprising means for selectively
preventing rotational and lateral movement of said spinal implant relative to said elongate
member.

39. The spinal construct of claim 35, further comprising means for facilitating fusion between said spinal implant and the adjacent vertebral bodies.

40. A surgical method, comprising:

5 providing a spinal implant adapted for positioning within an intervertebral space between adjacent vertebral bodies, the spinal implant having a first configuration and a second configuration, the second configuration having a greater height along the intervertebral space than the first configuration;

inserting the spinal implant into the intervertebral space while in the first configuration;

10 establishing a select height of the intervertebral space; and

transitioning the spinal implant from the first operational configuration to the second operational configuration while maintaining the select height of the intervertebral space to provide controlled compression of the spinal implant.

15 41. The method of claim 40, further comprising providing an elongate member sized to span the intervertebral space; and

wherein the establishing and maintaining of the select height of the intervertebral space are provided by engaging the elongate member to the adjacent vertebral bodies.

20 42. The method of claim 41, wherein the maintaining of the select height of the intervertebral space comprises preventing distraction of the adjacent vertebral bodies during the transitioning of the spinal implant from the first operational configuration to the second operational configuration.

43. The method of claim 42, wherein the transitioning of the spinal implant from the first operational configuration to the second operational configuration results from rotating the spinal implant relative to the elongate member.

5 44. The method of claim 41, further comprising connecting the spinal implant to the elongate member.

45. The method of claim 44, wherein the connecting of the spinal implant to the elongate member occurs prior to the inserting of the spinal implant into the intervertebral
10 space.

46. The method of claim 41, further comprising selectively engaging the spinal implant with the elongate member to prevent at least one of rotational and lateral movement of the spinal implant relative to the elongate member.

15 47. The method of claim 46, wherein one of the spinal implant and the elongate member includes at least one projection portion, another of the spinal implant and the elongate member including at least one aperture; and

wherein the selectively engaging comprises inserting the at least one projection portion
20 into a respective one of the at least one aperture.

48. The method of claim 47, wherein the inserting of the at least one projection portion into the respective one of the at least one the aperture is accomplished by threading

engagement of a fastener between the elongate member and the spinal implant.

49. The method of claim 48, wherein the elongate member includes an aperture extending therethrough and the spinal implant includes a threaded opening; and

5 wherein the threading engagement comprises inserting the fastener through the aperture in the elongate member and threading the fastener into the threaded opening in the spinal implant.

50. The method of claim 47, wherein the transitioning of the spinal implant from
10 the first operational configuration to the second operational configuration results from rotating the spinal implant about a longitudinal axis, the at least one projection portion and the at least one aperture being offset from the longitudinal axis.

51. The method of claim 47, wherein one of the spinal implant and the elongate
15 member includes at least two of the projection portions, another of the spinal implant and the elongate member including at least two of the apertures; and

wherein the selectively engaging comprises inserting the at least two projection portions into respective ones of the at least two apertures.

20 52. The method of claim 40, wherein the transitioning of the spinal implant from the first operational configuration to the second operational configuration results from rotation of the spinal implant.

53. The method of claim 40, wherein the spinal implant extends along a longitudinal axis and includes a first transverse dimension generally aligned along the height of the intervertebral space when in the first configuration, and a second transverse dimension generally aligned along the height of the intervertebral space when in the second configuration,
5 the second transverse dimension sized greater than the first transverse dimension and corresponding to the select height of the intervertebral space.

54. The method of claim 53, wherein the transitioning of the spinal implant from the first operational configuration to the second operational configuration comprises
10 reorienting the spinal implant to generally align the second transverse dimension along the height of the intervertebral space.

55. The method of claim 54, wherein reorienting comprises rotating the spinal implant about the longitudinal axis.

15 56. The method of claim 55, wherein the spinal implant includes a first pair of side surfaces spaced apart and arranged generally opposite one another to define the first transverse dimension, and a second pair of side surfaces spaced apart and arranged generally opposite one another to define the second transverse dimension;

20 wherein the inserting of the spinal implant occurs with the first pair of the side surfaces generally facing the first and second vertebral bodies; and

wherein the rotating of the spinal implant results in the second pair of the side surfaces

engaging the first and second vertebral bodies.

57. The method of claim 56, wherein the first transverse dimension is oriented substantially perpendicular to the second transverse dimension; and

5 wherein the rotating comprises rotating the spinal implant approximately ninety degrees.

58. The method of claim 40, further comprising distracting the intervertebral space prior to the inserting.

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59. The method of claim 40, wherein the spinal implant comprises a fusion cage; and

further comprising providing a bone growth promoting material positioned within the fusion cage to facilitate fusion with the adjacent vertebral bodies.

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60. The method of claim 59, wherein the transitioning of the spinal implant from the first operational configuration to the second operational configuration while maintaining the select height of the intervertebral space provides controlled compression of the bone growth promoting material within the fusion cage.

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61. The method of claim 40, further comprising resisting tensile loading of the adjacent vertebral bodies during extensional movement subsequent to the transitioning.

62. The method of claim 40, further comprising providing an elongate member sized to span the intervertebral space; and

wherein the establishing and maintaining of the select height of the intervertebral space
5 are provided by engaging the elongate member to the adjacent vertebral bodies; and

wherein the transitioning comprises expanding the spinal implant along a height of the intervertebral space; and

wherein the engaging occurs prior to the expanding.